

6100 6110 6120
GAATGC TACTAATACC AATAGTAGTA

6130 6140 6150 6160 6170 6180
ATACCAATAG TAGTAGCGGG GAAATGATGA TGGAGAAAGG AGAGATAAAA AACTGCTCTT
6190 6200
TCAATATCAG CACAAGCATA.

57
59. A DNA sequence as claimed in claim *30*, wherein the DNA has the sequence:

6260 6270 6280 6290 6300
T AATGATACTA CCAGCTATAC GTTGACAAGT TGTAACACCT

6310
CAGTCATTAC.

58
60. A DNA sequence as claimed in claim *30*, wherein the DNA has the sequence:

6390 6400 6410 6420
A ATAATAAGAC GTTCAATGGA ACAGGACCAT

6430 6440
GTACAAATGT CAGCACAGTA.

59
61. A DNA sequence as claimed in claim *30*, wherein the DNA has the sequence:

6490 6500 6510 6520 6530 6540
GTTGAA TGGCAGTCTA GCAGAAGAAG AGGTAGTAAT TAGATCTGCC AATTTCACAG

6550 6560 6570 6580 6590 6600
ACAATGCTAA AACCATAATA GTACAGCTGA ACCAATCTGT AGAAATTAAT TGTACAAGAC

6610 6620
CCAACAACAA TACAAGAAAA.

C1
Contd
⁶⁰ 62. A DNA sequence as claimed in claim ³⁰ 32, wherein the DNA has the sequence:

6860 6870 6880 6890 6900
T AATTCAACAC AACTGTTTAA TAGTACTTGG TTTAATAGTA
6910 6920 6930
CTTGGAGTAC TGAAGGGTCA AATAACACTG.

⁶¹ 63. A DNA sequence as claimed in claim ³⁰ 32, wherein the DNA has the sequence:

7540 7550 7560
GAATGC TAGTTGGAGT AATAAATCTC
7570 7580 7590 7600 7610 7620
TGGAACAGAT TTGGAATAAC ATGACCTGGA TGGAGTGGGA CAGAGAAATT AACAATTACA
7630
CAAGCTTAAT.

⁶² 64. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Met-Arg-Val-Lys-Glu-Lys-Tyr-Gln-His-Leu-Trp-Arg-Trp-Gly-Trp-Lys-.

⁶³ 65. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the

following:

Ser-Asp-Ala-Lys-Ala-Tyr-Asp-Thr-Glu-Val-His-Asn-Val-Trp-Ala-Thr-.

64
66.

A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Val-Pro-Thr-Asp-Pro-Asn-Pro-Gln-Glu-.

65
67.

A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Thr-Glu-Asn-Phe-Asn-Met-Trp-Lys-Asn-Asp-Met-Val-Glu-Gln-Met-His-Glu-Asp-Ile-Ile-Ser-Leu-Trp-Asp-Gln-Ser-Leu-.

66
68.

A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Val-Lys-Leu-Thr-Pro-Leu-Cys-Val-Ser-Leu-Lys-Cys-Thr-Asp-Leu-Gly-Asn-Ala-Thr-Asn-Thr-Asn-Ser-Ser-Asn-Thr-Asn-Ser-Ser-Ser-Gly-Glu-Met-Met-Met-Glu-Lys-Gly-Glu-Ile-Lys-Asn-Cys-Ser-Phe-Asn-Ile-Ser-Thr-Ser-Ile-Arg-Gly-Lys-Val-Gln-Lys-.

67
69. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Leu-Asp-Ile-Ile-Pro-Ile-Asp-Asn-Asp-Thr-Thr-.

68
70. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Lys-Cys-Asn-Asn-Lys-Thr-Phe-Asn-Gly-Thr-Gly-Pro-Cys-Thr-Asn-Val-Ser-Thr-Val-Gln-Cys-Thr-His-Gly-Ile-Arg-Pro-Val-Val-Ser-Thr-Gln-Leu-Leu-Leu-Asn-Gly-Ser-Leu-Ala-Glu-Glu-Glu-Val-Val-Ile-Arg-Ser-Ala-Asn-Phe-Thr-Asp-Asn-Ala-Lys-.

69
71. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Leu-Asn-Gln-Ser-Val-Glu-Ile-Asn-Cys-Thr-Arg-Pro-Asn-Asn-Asn-Thr-Arg-Lys-Ser-Ile-Arg-Ile-Gln-Arg-Gly-Pro-Gly-Arg-.

70
72. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the

following:

Lys-Ile-Gly-Asn-Met-Arg-Gln-Ala-His-Cys-Asn-Ile-Ser-Arg-Ala-Lys-
Trp-Asn-Ala-Thr-Leu-Lys-Gln-Ile-Ala-Ser-Lys-Leu-Arg-Glu-Gln-Phe-
Gly-Asn-Asn-Lys-Thr-Ile-Ile-Phe-Lys-Gln-Ser-Ser-Gly-Gly-Asp-Pro-.

71

71. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Cys-Asn-Ser-Thr-Gln-Leu-Phe-Asn-Ser-Thr-Trp-Phe-Asn-Ser-Thr-Trp-
Ser-Thr-Glu-Gly-Ser-Asn-Asn-Thr-Glu-Gly-Ser-Asp-.

72

72. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Leu-Thr-Arg-Asp-Gly-Gly-Asn-Asn-Asn-Asn-Gly-Ser-Glu-Ile-Phe-Arg-
Pro-Gly-Gly-Gly-Asp-Met-Arg-Asp-Asn-Trp-Arg-Ser-Glu-Leu-Tyr-Lys-
Tyr-Lys-Val-.

73

73. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Pro-Thr-Lys-Ala-Lys-Arg-Arg-Val-Val-Gln-Arg-Glu-Lys-Arg-.

*C1
Cont'd*

74
76

A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Val-Gln-Ala-Arg-Gln-Leu-Leu-Ser-Gly-Ile-Val-Gln-Gln-Gln-Asn-Asn-Leu-Leu-Arg-Ala-Ile-Glu-Ala-Gln-Gln-His-Leu-.

75
77

A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Ala-Val-Glu-Arg-Tyr-Leu-Lys-Asp-Gln-Gln-.

76
78

A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Pro-Trp-Asn-Ala-Ser-Trp-Ser-Asn-Lys-Ser-.

77
79

A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Leu-Ile-Glu-Glu-Ser-Gln-Asn-Gln-Gln-Glu-Lys-Asn-Glu-Gln-Glu-Leu-
Leu-Glu-Leu-Asp-Lys-Trp-Ala-.

C/Contd
78
80. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Arg-Val-Arg-Gln-Gly-Tyr-Ser-Pro-Leu-Ser-Phe-Gln-Thr-His-Leu-Pro-
Thr-Pro-Arg-Gly-Pro-Asp-Arg-Pro-Glu-Gly-Ile-Glu-Glu-Glu-Gly-Gly-
Glu-Arg-Asp-Arg-Asp-Arg-Ser-Ile-.

79
81. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein the amino acids are free of particles of said virus and the amino acid sequence comprises the following:

Tyr-His-Arg-Leu-Arg-Asp-Leu-Leu-Leu-Ile-Val-Thr-Arg-Ile-Val-Glu-
Leu-Leu-Gly-Arg-Arg-Gly-Trp-Glu-.

80
82. A cloned amino acid sequence of Human Immunodeficiency Virus Type 1 (HIV-1), wherein
the amino acids are free of particles of said virus;
the amino acid sequence is encoded by a nucleotide sequence,
which extends from about nucleotide 6095 to about 6201; and

the amino acid sequence comprises the following:
Asn-Ala-Thr-Asn-Thr-Asn-Ser-Ser-Asn-Thr-Asn-Ser-Ser-Ser-Gly-Glu-
Met-Met-Met-Glu-Lys-Gly-Glu-Ile-Lys-Asn-Cys-Ser-Phe-Asn-Ile-Ser-
Thr-Ser-Ile.

81
83. A cloned amino acid sequence of Human Immunodeficiency
Virus Type 1 (HIV-1), wherein
the amino acids are free of particles of said virus;
the amino acid sequence is encoded by a nucleotide sequence,
which extends from about nucleotide 6260 to about 6309; and
the amino acid sequence comprises the following:
Asn-Asp-Thr-Thr-Ser-Tyr-Thr-Leu-Thr-Ser-Cys-Asn-Thr-Ser-Val-Ile-
Thr.

82
84. A cloned amino acid sequence of Human Immunodeficiency
Virus Type 1 (HIV-1), wherein
the amino acids are free of particles of said virus;
the amino acid sequence is encoded by a nucleotide sequence,
which extends from about nucleotide 6389 to about 6441; and
and the amino acid sequence comprises the following:
Asn-Asn-Lys-Thr-Phe-Asn-Gly-Thr-Gly-Pro-Cys-Thr-Asn-Val-Ser-Thr-
Val.

83
85. A cloned amino acid sequence of Human Immunodeficiency
Virus Type 1 (HIV-1), wherein

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the amino acids are free of particles of said virus;
the amino acid sequence is encoded by a nucleotide sequence,
which extends from about nucleotide 6485 to about 6621; and
the amino acid sequence comprises the following:
Leu-Asn-Gly-Ser-Leu-Ala-Glu-Glu-Glu-Val-Val-Ile-Arg-Ser-Ala-Asn-
Phe-Thr-Asp-Asn-Ala-Lys-Thr-Ile-Ile-Val-Gln-Leu-Asn-Gln-Ser-Val-
Glu-Ile-Asn-Cys-Thr-Arg-Pro-Asn-Asn-Asn-Thr-Arg-Lys.

84
86. A cloned amino acid sequence of Human Immunodeficiency
Virus Type 1 (HIV-1), wherein

the amino acids are free of particles of said virus;
the amino acid sequence is encoded by a nucleotide sequence,
which extends from about nucleotide 6860 to about 6930; and
the amino acid sequence comprises the following:
Asn-Ser-Thr-Gln-Leu-Phe-Asn-Ser-Thr-Trp-Phe-Asn-Ser-Thr-Trp-Ser-
Thr-Glu-Gly-Ser-Asn-Leu-Thr.

85
87. A cloned amino acid sequence of Human Immunodeficiency
Virus Type 1 (HIV-1), wherein
the amino acids are free of particles of said virus;
the amino acid sequence is encoded by a nucleotide sequence,
which extends from about nucleotide 7535 to about 7630; and

the amino acid sequence comprises the following:

Asn-Ala-Ser-Trp-Ser-Asn-Lys-Ser-Leu-Glu-Gln-Ile-Trp-Asn-Asn-Met-
Thr-Trp-Met-Glu-Trp-Asp-Arg-Glu-Ile-Asn-Asn-Tyr-Thr-Ser-Leu-Ile-
His-Ser-Leu-Ile-Glu-Glu-Ser-Gln-Asn-Gln-Gln-Glu-Lys.

86
88.

A composition comprising at least one of the cloned amino acid sequences of Human Immunodeficiency Virus Type 1 (HIV-1) selected from the group consisting of:

- (1) amino acids 8 to 23 corresponding to
Met-Arg-Val-Lys-Glu-Lys-Tyr-Gln-His-Leu-Trp-Arg-Trp-Gly-Trp-Lys-;
- (2) amino acids 63 to 78 corresponding to
Ser-Asp-Ala-Lys-Ala-Tyr-Asp-Thr-Glu-Val-His-Asn-Val-Trp-Ala-Thr-;
- (3) amino acids 82 to 90 corresponding to
Val-Pro-Thr-Asp-Pro-Asn-Pro-Gln-Glu-;
- (4) amino acids 97 to 123 corresponding to
Thr-Glu-Asn-Phe-Asn-Met-Trp-Lys-Asn-Asp-Met-Val-Glu-Gln-Met-His-
Glu-Asp-Ile-Ile-Ser-Leu-Trp-Asp-Gln-Ser-Leu-;
- (5) amino acids 127 to 183 corresponding to
Val-Lys-Leu-Thr-Pro-Leu-Cys-Val-Ser-Leu-Lys-Cys-Thr-Asp-Leu-Gly-
Asn-Ala-Thr-Asn-Thr-Asn-Ser-Ser-Asn-Thr-Asn-Ser-Ser-Ser-Gly-Glu-
Met-Met-Met-Glu-Lys-Gly-Glu-Ile-Lys-Asn-Cys-Ser-Phe-Asn-Ile-Ser-
Thr-Ser-Ile-Arg-Gly-Lys-Val-Gln-Lys-;
- (6) amino acids 197 to 201 corresponding to
Leu-Asp-Ile-Ile-Pro-Ile-Asp-Asn-Asp-Thr-Thr-;

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(7) amino acids 239 to 294 corresponding to
Lys-Cys-Asn-Asn-Lys-Thr-Phe-Asn-Gly-Thr-Gly-Pro-Cys-Thr-Asn-Val-
Ser-Thr-Val-Gln-Cys-Thr-His-Gly-Ile-Arg-Pro-Val-Val-Ser-Thr-Gln-
Leu-Leu-Leu-Asn-Gly-Ser-Leu-Ala-Glu-Glu-Glu-Val-Val-Ile-Arg-Ser-
Ala-Asn-Phe-Thr-Asp-Asn-Ala-Lys-;

(8) amino acids 300 to 327 corresponding to
Leu-Asn-Gln-Ser-Val-Glu-Ile-Asn-Cys-Thr-Arg-Pro-Asn-Asn-Asn-Thr-
Arg-Lys-Ser-Ile-Arg-Ile-Gln-Arg-Gly-Pro-Gly-Arg-;

(9) amino acids 334 to 381 corresponding to
Lys-Ile-Gly-Asn-Met-Arg-Gln-Ala-His-Cys-Asn-Ile-Ser-Arg-Ala-Lys-
Trp-Asn-Ala-Thr-Leu-Lys-Gln-Ile-Ala-Ser-Lys-Leu-Arg-Glu-Gln-Phe-
Gly-Asn-Asn-Lys-Thr-Ile-Ile-Phe-Lys-Gln-Ser-Ser-Gly-Gly-Asp-Pro-;

(10) amino acids 397 to 424 corresponding to
Cys-Asn-Ser-Thr-Gln-Leu-Phe-Asn-Ser-Thr-Trp-Phe-Asn-Ser-Thr-Trp-
Ser-Thr-Glu-Gly-Ser-Asn-Asn-Thr-Glu-Gly-Ser-Asp-;

(11) amino acids 466 to 500 corresponding to
Leu-Thr-Arg-Asp-Gly-Gly-Asn-Asn-Asn-Asn-Gly-Ser-Glu-Ile-Phe-Arg-
Pro-Gly-Gly-Gly-Asp-Met-Arg-Asp-Asn-Trp-Arg-Ser-Glu-Leu-Tyr-Lys-
Tyr-Lys-Val-;

(12) amino acids 510 to 523 corresponding to
Pro-Thr-Lys-Ala-Lys-Arg-Arg-Val-Val-Gln-Arg-Glu-Lys-Arg-;

(13) amino acids 551 to 577 corresponding to
Val-Gln-Ala-Arg-Gln-Leu-Leu-Ser-Gly-Ile-Val-Gln-Gln-Gln-Asn-Asn-
Leu-Leu-Arg-Ala-Ile-Glu-Ala-Gln-Gln-His-Leu-;

(14) amino acids 594 to 603 corresponding to
Ala-Val-Glu-Arg-Tyr-Leu-Lys-Asp-Gln-Gln-;

(15) amino acids 621 to 630 corresponding to
Pro-Trp-Asn-Ala-Ser-Trp-Ser-Asn-Lys-Ser-;

(16) amino acids 657 to 679 corresponding to
Leu-Ile-Glu-Glu-Ser-Gln-Asn-Gln-Gln-Glu-Lys-Asn-Glu-Gln-Glu-Leu-
Leu-Glu-Leu-Asp-Lys-Trp-Ala-;

(17) amino acids 719 to 758 corresponding to
Arg-Val-Arg-Gln-Gly-Tyr-Ser-Pro-Leu-Ser-Phe-Gln-Thr-His-Leu-Pro-
Thr-Pro-Arg-Gly-Pro-Asp-Arg-Pro-Glu-Gly-Ile-Glu-Glu-Glu-Gly-Gly-
Glu-Arg-Asp-Arg-Asp-Arg-Ser-Ile-; and

(18) amino acids 780 to 803 corresponding to
Tyr-His-Arg-Leu-Arg-Asp-Leu-Leu-Leu-Ile-Val-Thr-Arg-Ile-Val-Glu-
Leu-Leu-Gly-Arg-Arg-Gly-Trp-Glu-;

wherein the amino acid sequences are free of particles of
said virus.

⁸⁷
~~88~~. A composition comprising at least one of the cloned
amino acid sequences of Human Immunodeficiency Virus type 1 (HIV-
1) selected from the group consisting of:

(1) the amino acid sequence encoded by the nucleotide
sequence of the env gene of HIV-1 extending from about nucleotide
6095 to about nucleotide 6200;

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(2) the amino acid sequence encoded by the nucleotide sequence of the *env* gene of HIV-1 extending from about nucleotide 6260 to about nucleotide 6310;

(3) the amino acid sequence encoded by the nucleotide sequence of the *env* gene of HIV-1 extending from about nucleotide 6390 to about nucleotide 6440;

(4) the amino acid sequence encoded by the nucleotide sequence of the *env* gene of HIV-1 extending from about nucleotide 6485 to about nucleotide 6620;

(5) the amino acid sequence encoded by the nucleotide sequence of the *env* gene of HIV-1 extending from about nucleotide 6860 to about nucleotide 6930; and

(6) the amino acid sequence encoded by the nucleotide sequence of the *env* gene of HIV-1 extending from about nucleotide 7535 to about nucleotide 7630;

wherein the amino acid sequences are free of particles of said virus.

88
90. A composition comprising two amino acid sequences of Human Immunodeficiency Virus Type 1 (HIV-1) selected from the group consisting of:

(1) amino acids 8 to 23 corresponding to Met-Arg-Val-Lys-Glu-Lys-Tyr-Gln-His-Leu-Trp-Arg-Trp-Gly-Trp-Lys-;

(2) amino acids 63 to 78 corresponding to Ser-Asp-Ala-Lys-Ala-Tyr-Asp-Thr-Glu-Val-His-Asn-Val-Trp-Ala-Thr-;

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(3) amino acids 82 to 90 corresponding to
Val-Pro-Thr-Asp-Pro-Asn-Pro-Gln-Glu-;

(4) amino acids 97 to 123 corresponding to
Thr-Glu-Asn-Phe-Asn-Met-Trp-Lys-Asn-Asp-Met-Val-Glu-Gln-Met-His-
Glu-Asp-Ile-Ile-Ser-Leu-Trp-Asp-Gln-Ser-Leu-;

(5) amino acids 127 to 183 corresponding to
Val-Lys-Leu-Thr-Pro-Leu-Cys-Val-Ser-Leu-Lys-Cys-Thr-Asp-Leu-Gly-
Asn-Ala-Thr-Asn-Thr-Asn-Ser-Ser-Asn-Thr-Asn-Ser-Ser-Ser-Gly-Glu-
Met-Met-Met-Glu-Lys-Gly-Glu-Ile-Lys-Asn-Cys-Ser-Phe-Asn-Ile-Ser-
Thr-Ser-Ile-Arg-Gly-Lys-Val-Gln-Lys-;

(6) amino acids 197 to 201 corresponding to
Leu-Asp-Ile-Ile-Pro-Ile-Asp-Asn-Asp-Thr-Thr-;

(7) amino acids 239 to 294 corresponding to
Lys-Cys-Asn-Asn-Lys-Thr-Phe-Asn-Gly-Thr-Gly-Pro-Cys-Thr-Asn-Val-
Ser-Thr-Val-Gln-Cys-Thr-His-Gly-Ile-Arg-Pro-Val-Val-Ser-Thr-Gln-
Leu-Leu-Leu-Asn-Gly-Ser-Leu-Ala-Glu-Glu-Glu-Val-Val-Ile-Arg-Ser-
Ala-Asn-Phe-Thr-Asp-Asn-Ala-Lys-;

(8) amino acids 300 to 327 corresponding to
Leu-Asn-Gln-Ser-Val-Glu-Ile-Asn-Cys-Thr-Arg-Pro-Asn-Asn-Asn-Thr-
Arg-Lys-Ser-Ile-Arg-Ile-Gln-Arg-Gly-Pro-Gly-Arg-;

(9) amino acids 334 to 381 corresponding to
Lys-Ile-Gly-Asn-Met-Arg-Gln-Ala-His-Cys-Asn-Ile-Ser-Arg-Ala-Lys-
Trp-Asn-Ala-Thr-Leu-Lys-Gln-Ile-Ala-Ser-Lys-Leu-Arg-Glu-Gln-Phe-
Gly-Asn-Asn-Lys-Thr-Ile-Ile-Phe-Lys-Gln-Ser-Ser-Gly-Gly-Asp-Pro-;

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(10) amino acids 397 to 424 corresponding to
Cys-Asn-Ser-Thr-Gln-Leu-Phe-Asn-Ser-Thr-Trp-Phe-Asn-Ser-Thr-Trp-
Ser-Thr-Glu-Gly-Ser-Asn-Asn-Thr-Glu-Gly-Ser-Asp-;

(11) amino acids 466 to 500 corresponding to
Leu-Thr-Arg-Asp-Gly-Gly-Asn-Asn-Asn-Asn-Gly-Ser-Glu-Ile-Phe-Arg-
Pro-Gly-Gly-Gly-Asp-Met-Arg-Asp-Asn-Trp-Arg-Ser-Glu-Leu-Tyr-Lys-
Tyr-Lys-Val-;

(12) amino acids 510 to 523 corresponding to
Pro-Thr-Lys-Ala-Lys-Arg-Arg-Val-Val-Gln-Arg-Glu-Lys-Arg-;

(13) amino acids 551 to 577 corresponding to
Val-Gln-Ala-Arg-Gln-Leu-Leu-Ser-Gly-Ile-Val-Gln-Gln-Gln-Asn-Asn-
Leu-Leu-Arg-Ala-Ile-Glu-Ala-Gln-Gln-His-Leu-;

(14) amino acids 594 to 603 corresponding to
Ala-Val-Glu-Arg-Tyr-Leu-Lys-Asp-Gln-Gln-;

(15) amino acids 621 to 630 corresponding to
Pro-Trp-Asn-Ala-Ser-Trp-Ser-Asn-Lys-Ser-;

(16) amino acids 657 to 679 corresponding to
Leu-Ile-Glu-Glu-Ser-Gln-Asn-Gln-Gln-Glu-Lys-Asn-Glu-Gln-Glu-Leu-
Leu-Glu-Leu-Asp-Lys-Trp-Ala-;

(17) amino acids 719 to 758 corresponding to
Arg-Val-Arg-Gln-Gly-Tyr-Ser-Pro-Leu-Ser-Phe-Gln-Thr-His-Leu-Pro-
Thr-Pro-Arg-Gly-Pro-Asp-Arg-Pro-Glu-Gly-Ile-Glu-Glu-Glu-Gly-Gly-
Glu-Arg-Asp-Arg-Asp-Arg-Ser-Ile-; and

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(18) amino acids 780 to 803 corresponding to
Tyr-His-Arg-Leu-Arg-Asp-Leu-Leu-Leu-Ile-Val-Thr-Arg-Ile-Val-Glu-
Leu-Leu-Gly-Arg-Arg-Gly-Trp-Glu;

wherein the amino acid sequences are free of particles of
said virus.

⁸⁹
91. A composition as claimed in claim ⁸⁸90, wherein the
composition consists essentially of the amino acid sequences
recited in (1) and (2).

⁹⁰
92. A composition as claimed in claim ⁸⁸90, wherein the
composition consists essentially of the amino acid sequences
recited in (2) and (3).

⁹¹
93. A composition as claimed in claim ⁸⁸90, wherein the
composition consists essentially of the amino acid sequences
recited in (3) and (4).

⁹²
94. A composition as claimed in claim ⁸⁸90, wherein the
composition consists essentially of the amino acid sequences
recited in (4) and (5).

⁹³
95. A composition as claimed in claim ⁸⁸90, wherein the
composition consists essentially of the amino acid sequences
recited in (5) and (6).

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⁹⁴

96. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (6) and (7).

⁹⁵

97. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (7) and (8).

⁹⁶

98. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (8) and (9).

⁹⁷

99. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (9) and (10).

⁹⁸

100. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (10) and (11).

⁹⁹

101. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (11) and (12).

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102. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (12) and (13).

¹⁰¹
103. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (13) and (14).

¹⁰²
104. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (14) and (15).

¹⁰³
105. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (15) and (16).

¹⁰⁴
106. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (16) and (17).

¹⁰⁵
107. A composition as claimed in claim ⁸⁸90, wherein the composition consists essentially of the amino acid sequences recited in (17) and (18).